

Urban Planning and Design

Research outputs from EPSRC'S Sustainable Urban Environments (SUE) programme

The
ISSUES
Project

Integrated Sustainability Assessment Toolkit (ISAT)

Potential users/Target audience: Urban planners; Developers; Strategic Environmental Assessment (SEA) consultants; Sustainability consultants

The SUE-MoT consortium is developing a comprehensive and transparent web-enabled framework that encourages key decision-makers to systematically assess the sustainability of urban developments taking account of scale, life cycle, location, context and all stakeholder values. Early outputs identified 670 sustainability assessment tools from a comprehensive literature review. The 165 of these concerned with urban developments have been evaluated against a series of relevant criteria. The 30 or so most widely used have been cross-mapped on to the contexts where their use is most appropriate. The ISAT allows users to choose the tools that are best suited to assessing their specific needs and integrates their outputs to provide a holistic sustainability assessment.

website <http://sue-mot.org/research/work-package-1/>

contact Prof. Malcolm Horner at r.m.w.horner@dundee.ac.uk

SUE-MoT

Influence of Urban Form on Social Sustainability

Potential users/Target audience: Urban planners; Local Authorities; architects; planners; residents/communities

The CityForm consortium has produced a large body of evidence on the influence of urban form on social, economic and environmental sustainability. This includes robust models which test how different elements of urban form (e.g. density, land uses, urban layouts) on a range of sustainability indicators. In relation to social sustainability, some of the key findings suggest that while residents who live in higher density neighbourhoods are more likely to have better access to services and facilities, they are also more likely to report feeling less safe and less satisfied with where they live than residents in lower density residential neighbourhoods. The research also found that higher density neighbourhoods are likely to have poorer environmental quality than lower density ones and residents on lower incomes and in poverty are more likely to live in neighbourhoods with poor quality environments.

website <http://www.city-form.com>

contact Dr. Nicola Dempsey at ndempsey@brookes.ac.uk

CITYFORM

Decision-making for Sustainability

Potential users/Target audience: Urban planners; Local Authorities; Architects; Planners; Residents/communities

The Vivacity2020 consortium has produced a body of evidence, including case studies of Clerkenwell, Salford and Sheffield about how the urban design decision-making process works in practice and how it can be improved to facilitate urban sustainability. Internships with Sheffield and Islington Borough Councils have helped to shape the process and have given decision-makers within these local authorities an opportunity to consider more carefully how the Government's sustainability agenda should be incorporated into design, development and planning.

website <http://www.vivacity2020.eu>

contact Prof. Rachel Cooper at r.cooper@lancaster.ac.uk, Joanne Leach at joanne@joanneleach.co.uk

VivaCity2020

Sustainability Toolkit

Potential users/Target audience: Urban planners; Local Authorities; Individuals; Communities; Architects

The Vivacity2020 consortium has produced a large and comprehensive Toolkit for a wide range of users concerned with urban design decision-making and city planning. The tools and resources support sustainable and socially responsible urban design decision-making. These tools include many case studies, surveys, guidelines and information, and can be found on the VivaCity2020 website. The tools fall broadly within these categories: urban design decision-making; generation and evolution of land use diversity; designing against crime; environmental quality; public conveniences, housing and ICT solutions.

website <http://www.vivacity2020.eu>

contact Prof. Rachel Cooper at r.cooper@lancaster.ac.uk, Joanne Leach at joanne@joanneleach.co.uk

VivaCity2020

Applying Full Cost Accounting to Sustainability Assessment

Potential users/Target audience: Urban planners; Developers; Sustainability practitioners

The Sue-MoT team has developed a full cost accounting framework for assessing the economic, environmental and social impacts of urban developments (UD-SAM). The framework is based on a successful Sustainability Assessment Model first developed for use in the petrochemical industry. Although some 900 indicators of sustainability have been identified, a rigorous analysis of the literature supplemented by a survey of practitioners has demonstrated that the 17 impacts provide are sufficient to represent the most significant parts of the sustainability landscape. Appropriate monetisation techniques are being identified for each impact. In a simple pilot case study, the analysis shows, somewhat surprisingly, that the environmental impacts of transport are an order of magnitude less than the total life cycle environmental impact of the product.

website <http://sue-mot.org/research/work-package-3/>

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SUE-MoT

Finding a Common Currency for Sustainability Assessment

Potential users/Target audience: Urban planners; Developers; Sustainability practitioners; Researchers

A comprehensive review of biophysical and cost-based models has shown that no single tool can successfully address the three dimensions of sustainability simultaneously. The relative merits of ecological footprint, emergy, exergy and contingent valuation methods have been evaluated. The research team has concluded that a reductionist approach is inappropriate for assessment of the sustainability of urban developments. However an exergetic analysis of the UK has demonstrated the relative impacts of different industrial sectors and of different modes of transport.

website <http://sue-mot.org/research/work-package-8/>

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SUE-MoT

Environmental Equity in Urban Developments

Potential users/Target audience: Urban planners; Local Authorities

The SUE-MoT consortium is developing a framework with associated assessment procedures (for scoping-level, simple-level and detailed-level assessments) that will help urban decision-makers examine the environmental equity implications of a proposed urban development. The framework has been developed to be compatible with various existing impact assessment procedures and focuses on five key impacts: Noise and Vibration, Air Quality, Community Severance, Property Encroachment, and Visibility.

website <http://sue-mot.org/research/work-package-4/>

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SUE-MoT

Influence of Urban Layout and Spatial Structure on Sustainability

Potential users/Target audience: Urban planners; Urban designers; Local Authorities; Transport planners

The urban layout of five UK cities was measured and analysed by the CityForm team to examine how it influenced social, economic and environmental sustainability. Multiple Centrality Assessment (MCA) is a sophisticated method of measuring the compactness and layout of urban networks taking into account both the network properties and associated physical dimensions (such as distance). The analysis shows that urban layout is significantly related to other urban form measures including density, open spaces, land use as well as with social, economic and transport measures such as demographic characteristics of the neighbourhoods, rental values of the property and access to facilities.

website <http://www.city-form.org/>

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CITYFORM

Influence of Urban Form on Economic Sustainability

Potential users/Target audience: Urban planners; Urban designers; Local Authorities

This research investigated residential, office and retail viability, as well as social and physical infrastructure costs in relation to urban form. The findings show some locational flexibility in the commercial and industrial property sectors. While the city centre remains the dominant location for offices and retailing the analysis suggests that agglomeration economies are no longer focused entirely on central city locations and there are benefits from decentralisation. These patterns suggest that the viability of commercial property market will not constrain different urban forms including decentralised urban systems. However, while decentralised city forms follow market trends it is constrained by higher physical infrastructure costs.

The analysis of the housing market shows that households prefer low density housing and that there appears to be a household life-cycle element to residential location choice. This means that it will be difficult to encourage more concentrated urban forms without significant changes to the underlying forces of city housing markets, for example by increasing commuting costs. Substantial public expenditure costs are required to engineer a strategic restructuring of price structures.

website <http://www.city-form.org/>

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CITYFORM

Influence of Quality of the Built Environment on Social Cohesion in English Neighbourhoods

Potential users/Target audience: Urban planners; Urban designers; Local Authorities

This doctoral research formed part of the CityForm project and tested the claims that high quality built environments are places in which people should live and work on the grounds that they support positive social activity and behaviour. Features of quality such as attractiveness, maintenance, accessibility and connectedness were analysed alongside dimensions of social cohesion including social interaction, feelings of safety and sense of community and place attachment. The findings showed that features of quality of the built environment do have significant and complex associations with social cohesion; the strength and nature of the association however differ between different features of quality.

website <http://www.city-form.org/>

contact Dr. Nicola Dempsey at ndempsey@brookes.ac.uk

CITYFORM

Capturing and Quantifying Stakeholder Values

Potential users/Target audience: Urban planners; Developers; Sustainability practitioners

The SUE MOT consortium has proposed techniques to identify and map relevant stakeholders in sustainability assessment. Methods are also being developed to capture and quantify views and values of stakeholders in a transparent manner throughout the process of assessment. Methods to incorporate stakeholder values within an integrated sustainability assessment toolkit (ISAT) are also being explored

website <http://sue-mot.org/research/work-package-2/>

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SUE-MoT

Sustainable Urban Growth (SUE2¹)

Potential users/Target audience:

The REVISIONS consortium will be developing models and guidelines for sustainable urban growth by extending a methodology used for developing transport plans to include environmental, economic and social impacts. The consortium will be conducting case studies of cities of similar size but at different stages of development, e.g. Greater London, Beijing and Sao Paulo.

website

contact

Contact Prof. Marcial Echenique at me15@cam.ac.uk

REVISIONS

Scenario-building for Sustainable Urban Environments (SUE2)

Potential users/Target audience: Local Authorities, Regional and National decision-makers.

The Urban Futures consortium will be modelling scenarios for urban development to assess the best options for promoting sustainability. The focus of the work will be smaller urban areas. Case studies are planned for Morecambe (pop. 96k) and Worcester (pop. 94k) with the intention of using urban areas in the UK and abroad (e.g. in Singapore and India) as test-beds for the results.

website

contact

Contact Prof. Chris Rogers – c.d.f.rogers@bham.ac.uk

URBAN FUTURES

Sustainable Urban Regeneration (SUE2¹)

Potential users/Target audience: Central government; Local Authorities; Carbon footprinters

The SURegen consortium will be developing the Regeneration Simulator Workbench (RSW), a software tool for informing the decision-making processes for regeneration projects that goes beyond technical assessment to include more intangible impacts, e.g. factors influencing public perceptions. Initial case studies will be in Manchester and Salford.

¹ 'SUE2' indicates that the consortium is one of the second round of Sustainable Urban Environment consortia. These are beginning their work between late 2007 and mid 2008.

website	
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SUREGEN	

Role of Open Space in Urban Social Sustainability	
Potential users/Target audience: Urban planners; Local Authorities; Health professionals	
The CityForm consortium produced a body of evidence on the benefits of different forms of urban green spaces (parks, gardens, etc) for promoting greater social sustainability in urban areas.	
website	http://www.city-form.com
contact	Dr. Katherine Irvine at kirvine@dmu.ac.uk
CITYFORM	

Role of Open Space in Safer Communities	
Potential users/Target audience: Urban planners; Local Authorities; Crime prevention professionals	
The Vivacity2020 consortium has produced some evidence on how open spaces affect community awareness and behaviour in relation to anti-social behaviour and crime.	
website	http://www.vivacity2020.eu
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VivaCity2020	

Ecology	
Potential Users: Urban planners; Local Authorities; Conservation groups (e.g. the RSPB); Biologists, ecologists, and other scientists	
Research conducted by Sheffield University as part of the CityForm consortium found that birds are changing their singing patterns due to increasing urban noises levels. The research focused on robins and found that they are singing earlier in the day (before noise levels peak during rush hour). This is part of a wider body of research which is finding further evidence of behavioural changes in urban birds, and even some evidence of speciation. This work has been reported in New Scientist and the mainstream media. The group also found evidence for the benefits of 'green corridors' and other green spaces (including very small areas such as verges) in sustaining urban biodiversity.	
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CITYFORM	

New Networks for Urban Sustainability	
Several of the consortia have launched networks to extend and apply their research. CityForm at Oxford Brookes has launched a network to build links with partners in India and apply their research to urban planning there. Vivacity2020 has launched UrbanBuzz, an urban sustainability network with over 1000 policy maker and practitioner members that is	

currently centred on London and the South East but with the aim of expanding nationally. They are also behind the EPSRC's Dongtan Networks which aim to take the best of the UK's research from academia and the private sector and apply it to Chinese urban planning.

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VARIOUS

Designing Against Crime

Potential users/Target audience: Urban planners and designers; Local Authorities; Architects

The Vivacity2020 consortium has produced a range of case studies tackling designing against crime in three urban environments: London, Manchester and Sheffield. It has also developed a new method for analysing crime using Space Syntax. The case studies and methodology can be found on the VivaCity2020 website.

website

<http://www.vivacity2020.eu/>

contact

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VivaCity2020